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AUTHOR Garber, Herbert; Schell, Robert E.
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ABSTRACT

Attrition rates at the State University of New York at Oswego are investigated in this paper. In 1975-76 51 percent of the students who entered as freshmen failed to graduate. The major objective of the study was to isolate and describe the differences that exist in the rates and modes of attrition among students who entered the college as freshmen under: (1) the regular admissions program; (2) the Equal Opportunity Program; and (3) the Regional Service Program. Attrition rate for males and females within each of these three programs are examined. Students admitted under special admissions programs were found to leave early in greater proportion than students who entered under the regular admissions program. The rate and mode of attrition did not vary among men and women in general. Admitting students under special admissions programs appears to add between 7 and 12 percent to the total attrition rate. It is concluded that the attrition rate of the College is the result of several complex interactions, including the enrollment of students under special admissions programs. Statistical data for the study are appended. (SF)

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DIFFERENCES IN RATES AND MODES OF ATTRITION BETWEEN THREE GROUPS OF OSWEGO UNDERGRADUATE STUDENTS

BEST COPY AVAILABLE

By
Herbert Garber
Robert E. Schell

December, 1977

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DIFFERENCES IN RATES AND MODES OF ATTRITION BETWEEN THREE GROUPS OF OSWEGO UNDERGRADUATE STUDENTS

INTRODUCTION:

Students who enter the College at Oswego as freshmen do not invariably graduate. Since 1972, the attrition of students has been recognized as a drain on the resources of the College and as a source of frustration for students.

To meet the commitment of the Mission Statement of 1977, the College must continue to seek out and confer degrees upon undergraduate students of high academic promise. The ability to meet this commitment depends, in part, upon two processes:

(1) above average freshman students must continue to enroll in the College in adequate numbers and

(2) a greater proportion of undergraduate students must persist to graduation.

A high rate of attrition is a threat to the College's ability to meet its commitment. In 1975-1976, 51% of the students who entered as freshmen failed to graduate. This is judged by many to be intolerably high. A number of studies have been initiated with the objective of designing programs and policies that will reduce the current rate of attrition.

One assumption persists in the thinking of many members of the campus community that has a direct bearing on the ability of the College to meet its need to reduce attrition:

IT IS BELIEVED THAT THE PROBABILITY OF ATTRITION IS EQUALLY HIGH FOR EACH AND EVERY FRESHMAN WHO ENROLLS AT OSWEGO.

This study attempts to find out if this belief is warranted or not.

The College has several different admissions programs designed to provide students from different educational backgrounds with the opportunity to earn their degree. Different admissions programs may result in different rates and modes of attrition that have unique policy implications.

The purpose of this study is to isolate and describe the differences that exist in the rates and modes of attrition among students who enter the College as freshmen under:

(1) the regular admissions program,
(2) the Equal Opportunity Program, and
(3) the Regional Service Program.

RESEARCH QUESTIONS:

The basic questions to be answered by this study were:

(1) Do the rates and modes of leaving Oswego before graduation differ for students who entered the College under the regular admissions program (REG), the Equal Opportunity Program (EOP), and the Regional Services Program (RSP)?

(2) Do the rates and modes of leaving Oswego before graduation differ for male and female students in general or for male and female student within each type of admission?

(3) What proportion of attrition is attributable to students who were admitted to the College under one of the special admissions programs (RSP plus EOP)?

SUMMARY OF RESULTS:

(1) When the influence of the year of entrance was removed statistically, it was found that students admitted under:

   (a) the special admissions programs left early in greater proportions than did students who entered under the regular admissions program.

   (b) the special admissions programs tended to be academically disqualified after fewer semesters than did students who were admitted under the regular program.

   (c) the regular admissions program tended to graduate at a higher rate than did those admitted under special programs.

(2) When the influence of the year of entrance was removed statistically, it was found that:

   (a) The rate and mode of attrition did not differ among men and women in general.

   (b) EOP males tended to disqualify at a higher rate than males in general and males admitted under the regular admissions program.

(3) Based on the sample of students who entered the College in 1972, 20.3% of the attrition of the total student population was due to students who were admitted under special admissions programs.

(4) The overall attrition rate may actually be decreasing when the component due to students admitted under special programs is removed.

CONCLUSIONS:

(1) The attrition rate of the College is the result of the interaction of several complex causes including the enrollment of students under special admissions programs.

(2) Admitting students under special admissions programs adds between 7 and 12% to the total attrition rate.

(3) Students admitted under special programs increase the rate of disqualification and reduce the rate of voluntary withdrawal.

(4) The decision to maintain special admissions programs is not one that can be wholly based on the influence of such programs on the attrition rate of the College. Rather, it represents the commitment of the College to a particular set of values and priorities.

The causes of attrition in special programs should be examined cooperatively with those who are in positions to offer knowledgeable suggestions about the needs and experiences of students admitted under the EOP and RSP programs. What problems do they face before coming to the College, while they are here, and after they leave?

(5) The assumption that the probability of attrition is equally high for each and every freshmen who enrolls at Oswego is unfounded.

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APPENDIX

Details on procedures and results are contained in this appendix. Included are six computer-generated tables (Tables 3-8) with explanatory footnotes. The interpretation of MANOVA products usually requires a high degree of familiarity with advanced statistics. We hope the footnotes are sufficiently helpful. We will be glad to try to answer any questions readers may have about these tables.

PROCEDURES:

(1) Samples of students from each entering class beginning with the Fall 1972 through Fall 1976 were drawn from College records. Sex and admissions type were recorded as predictor variables, year of entrance was recorded as a covariate, and mode of leaving (withdrawal, disqualification, graduation) and semesters attended were recorded as dependent variables.

(2) The data were analyzed by means of a Multivariate Analysis of Variance (MANOVA) with year of entrance as a covariate since recent enrollees could not have had the same opportunity to withdraw, disqualify, or graduate as did those who entered earlier.

(3) The data ~~was~~ were presented in a tabular form to provide insight into the influence of special admissions programs on the overall attrition rate.

RESULTS:

(1) The results of the Multivariate Analysis of Variance of the main effects of sex and admissions type, the covariate of year of entrance, and the dependent variables of withdrew, disqualified, or graduated, and semesters attended before leaving are shown in Tables three through eight. Each table is explained with a brief footnote that appears on the table. The tables are reproductions of the computer print-outs of this complex analysis of the data.

(2) Table one shows the actual rates of withdrawal and disqualification among samples of students drawn from each admissions type.

TABLE 1

PROPORTION OF EACH SEPARATE COHORT THAT LEFT OSWEGO EARLY BY ENTRY YEAR AND BY ADMISSIONS MODE (AS OF SEPTEMBER 1977)

	1972		1973		1974		1975		1976	
	DIS	W/D	DIS	W/D	DIS	W/D	DIS	W/D	DIS	W/D
EOP	.66	.09	.40	.30	.44	.33	.25	.13	.17	.08
RSP	.61	.22	.38	.15	.29	.43	.38	.25	.26	.16
REG	.08	.47	.14	.38	.20	.43	.10	.28	.03	.16
TOTAL	.16	.43	.16	.37	.23	.42	.12	.27	.06	.15

This table can be read to determine what occurred in any particular year by reading down the columns. For example, from the class entering in 1972, EOP lost 75%, RSP lost 83%, and REG lost 55%. The loss for all groups was 59% (.16 plus .43 = .59).

(3) Table two shows the proportion of the attrition rate that can be explained by knowledge of the admissions type. The table contains three columns. Column A shows the uncorrected rate of attrition for the years 1972 through 1976. Column B shows the amount of attrition that is due to the students admitted under special programs. Column C shows the corrected attrition rate if special program students were not included. It is the difference between columns A and B. Only 1972 contains final figures.

TABLE 2

	A	B	C
YEAR	TOT. ATTR.	RDCTN IN RATE	ADJ RATE
1972	.59	.12	.48
1973	.50	.07	.43
1974	.65	.12	.53
1975	.39	.05	.34
1976	.21	.06	.15

NOTE: All values are estimates, based on samples of the populations that they represent

Without the special admissions students the class of 1972 would have graduated 61% of its cohort rather than 48%. Of the 59% total attrition, nearly one-fifth came from special admissions students who left early.

TABLE 1

MEANS AND STANDARD DEVIATIONS

FACTOR T	FACTOR S	OBS		VARIABLE YEAR ENT	WITHDREW	DISQUALI	GRADUATE	SEM ATTN
1	0	40	M	74.150	0.100	0.500	0.100	2.975
			SD	1.657	0.303	0.506	0.303	2.212
1	1	46	M	74.000	0.347	0.239	0.152	3.434
			SD	1.534	0.481	0.431	0.363	2.770
2	0	43	M	74.069	0.232	0.372	0.069	3.046
			SD	1.594	0.427	0.489	0.257	2.505
2	1	38	M	74.500	0.289	0.368	0.052	2.868
			SD	1.606	0.459	0.488	0.225	2.452
3	0	91	M	73.791	0.395	0.142	0.164	4.253
			SD	1.345	0.491	0.351	0.373	2.749
3	1	91	M	74.011	0.318	0.065	0.230	4.329
			SD	1.464	0.468	0.249	0.423	2.838

COMPLETE FACTORIAL WITH NO MISSING CELLS

Factors (independent variables)

T is admissions type
- T = 1 Equal Opportunity Program
- T = 2 Regional Service Program
- T = 3 Regular admissions

S is sex
- S = 0 Male
- S = 1 Female

Year of entrance (YEAR ENT) is used as a covariate in this analysis. Its effect on the dependent variables will be removed before proceeding with the analysis.

TABLE 2

WITHIN CELLS CORRELATIONS OF CRITERIA WITH STANDARD DEVIATIONS ON DIAGONAL, ADJUSTED FOR 1 COVARIATES

VARIABLE	WITHDREW	DISQUALI	GRADUATE	SEM ATTN
WITHDREW	0.453			
DISQUALI	-0.363	0.387		
GRADUATE	-0.368	-0.301	0.326	
SEM ATTN	-0.471	-0.337	0.720	2.328

ESTIMATES ADJUSTED FOR 1 COVARIATES

		CRITERIA			
CONTRAST		WITHDREW	DISQUALI	GRADUATE	SEM ATTN
T					
	1	-0.057	0.087	-0.003	-0.295
	2	-0.014	0.100	-0.049	-0.361
S					
	1	-0.040	0.052	-0.024	-0.126
TS					
	1	-0.081	0.082	0.005	-0.038
	2	0.005	-0.052	0.013	0.029

The within cell correlations reflect the correlations between the dependent variables after the effect of year of entrance has been removed.

The contrasts are the customary deviations of row and column means from the grand mean and the generalizations of these for the interaction contrasts. They reflect the deviations after the effect of year of entrance has been removed statistically.

TABLE 3

TEST OF WITHIN CELLS REGRESSION

MULTIVARIATE TESTS OF SIGNIFICANCE USING WILKS LAMBDA CRITERION

TEST OF ROOTS	F	DFHYP	DFERR	P LESS THAN	R
1 THROUGH 1	109.947	4.000	339.000	0.001	0.751

VARIABLE	UNIVARIATE F TESTS F(1, 342)	MEAN SQ	P LESS THAN	STANDARDIZED DISCRIMINANT FUNCTION COEFFICIE 1
WITHDREW	2.936	0.604	0.087	1.151
DISQUALI	17.041	2.563	0.001	1.102
GRADUATE	59.253	8.335	0.001	0.229
SEM ATTN	106.217	575.658	0.001	1.239

CORRELATIONS BETWEEN VARIABLES AND COMPOSITE SCORES

VARIABLE	1
WITHDREW	0.081
DISQUALI	0.195
GRADUATE	0.365
SEM ATTN	0.489

RAW REGRESSION COEFFICIENTS

	VARIATES			
COVARIATES	WITHDREW	DISQUALI	GRADUATE	SEM ATTN
YEAR ENT	-0.028	-0.057	-0.090	-0.863

This table shows the effect of removing the variation due to the year of entrance (YEAR ENT) from the dependent variables collectively (multivariate test of significance) and individually (univariate tests of significance). The fact that the multivariate test is significant ($p < 0.001$) is indicative of the precision the the covariate analysis adds. The year of entrance was significantly related to the dependent variables disqualified (DISQUAL), graduated (GRADUATE), and semesters attended (SEM ATTN). The nature of the relationship can be deduced from the standardized discriminant function coefficients, the correlations between the variables and the composite scores, and the raw regression coefficients, if desired.

TABLE 4

TEST OF TS

MULTIVARIATE TESTS OF SIGNIFICANCE USING WILKS LAMBDA CRITERION

TEST OF ROOTS	F	DFHYP	DFERR	P LESS THAN	R
1 THROUGH 2	1.955	8.000	678.000	0.049	0.171
2 THROUGH 2	1.783	3.000	339.500	0.150	0.124

VARIABLE	UNIVARIATE F TESTS F(2, 342)	MEAN SQ	P LESS THAN	STANDARDIZED DISCRIMINANT FUNCTION COEFFICIE 1
WITHDREW	3.542	0.729	0.029	1.091
DISQUALI	3.196	0.481	0.042	0.032
GRADUATE	0.325	0.034	0.722	-0.409
SEM ATTN	0.019	0.106	0.980	0.862

DISCRIMINANT SCORES

CONTRAST	1
1	-0.209
2	0.002

CORRELATIONS BETWEEN VARIABLES AND COMPOSITE SCORES

VARIABLE	1
WITHDREW	0.823
DISQUALI	-0.532
GRADUATE	-0.200
SEM ATTN	0.041

This table shows the results of the test of the hypothesis of an interaction between the main effects of admissions type (T) and sex (S). The hypothesis of no difference was rejected ($p = 0.049$). Most of the difference was due to differences in withdrawl (WITHDREW) and semesters attended (SEM ATTN). High scores reflect a high rate of withdrawl after several semesters in attendance. The difference is primarily between male students admitted under the regular admissions program, who have high scores, and males admitted under the equal opportunity program, who have low scores.

TABLE 5

TEST OF S

MULTIVARIATE TESTS OF SIGNIFICANCE USING WILKS LAMBDA CRITERION

TEST OF ROOTS	F	DFHYP	DFERR	P LESS THAN	R
1 THROUGH 1	1.704	4.000	339.000	0.148	0.140

UNIVARIATE F TESTS

VARIABLE	F(1, 342)	MEAN SQ	P LESS THAN	STANDARDIZED DISCRIMINANT FUNCTION COEFFICIE
				1
WITHDREW	0.636	0.131	0.425	0.190
DISQUALI	5.195	0.761	0.023	-0.677
GRADUATE	2.863	0.306	0.091	0.703
SEM ATTN	0.985	0.343	0.321	-0.267

DISCRIMINANT SCORES

CONTRAST	
	1
1	-0.145

CORRELATIONS BETWEEN VARIABLES AND COMPOSITE SCORES

VARIABLE	
	1
WITHDREW	0.304
DISQUALI	-0.869
GRADUATE	0.645
SEM ATTN	0.378

This table shows the results of the test of the hypothesis of differences in the dependent variables due to the main effect of sex. The test was not significant ($p = 0.148$) and the hypothesis of equal means for men and women was not rejected.

TABLE 6

TEST OF T

MULTIVARIATE TESTS OF SIGNIFICANCE USING WILKS LAMBDA CRITERION

TEST OF ROOTS	F	DFHYP	DFERR	P LESS THAN	R
1 THROUGH 2	6.225	8.000	678.000	0.001	0.357
2 THROUGH 2	0.570	3.000	339.500	0.634	0.070

VARIABLE	UNIVARIATE F TESTS F(2, 342)	MEAN SQ	P LESS THAN	STANDARDIZED DISCRIMINANT FUNCTION COEFFICIE 1
WITHDREW	2.385	0.491	0.093	0.222
DISQUALI	21.969	3.304	0.001	-0.730
GRADUATE	2.885	0.308	0.057	-0.253
SEM ATTN	7.703	41.748	0.001	0.595

DISCRIMINANT SCORES

CONTRAST	1
1	-0.265
2	-0.249

CORRELATIONS BETWEEN VARIABLES AND COMPOSITE SCORES

VARIABLE	1
WITHDREW	0.301
DISQUALI	-0.935
GRADUATE	0.313
SEM ATTN	0.553

This table shows the results of the test of the hypothesis of equal mean scores on the dependent variables for the three admissions types. The hypothesis was rejected ($p < 0.001$). An examination of the standardized discriminant function coefficients indicates that the differences are due to a combination of a low disqualification rate (DISQUALI) and larger numbers of semesters in attendance (SEM ATTN). Students admitted under a regular admissions program have high scores on the composite, indicating a high degree of persistence and a low rate of disqualification. Students admitted under the equal opportunity program and the regional service program have low scores that are similar to one another, indicating relatively high rates of disqualification and low rates of persistence.